

TIPP-ELIZABETH ROAD BRIDGE
Spanning the Great Miami River at
Tipp-Elizabeth Road
Tipp City
Miami County
Ohio

HAER No. OH-99

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
U.S. Custom House
200 Chestnut Street
Philadelphia, PA 19106

HISTORIC AMERICAN ENGINEERING RECORD

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TIPP-ELIZABETH ROAD BRIDGE

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Location:

Spanning the Great Miami River at Tipp-Elizabeth Road, Tipp City, Miami County, Ohio.

USGS Tipp City Quadrangle, Ohio
Universal Transverse Mercator Coordinates:
16. 741960.4427800

Fabricator:

Central States Bridge Company

Date of Construction: 1926

Present Owner:

Miami County, Ohio
Miami County Engineer's Office
2100 North County Road 25-A
Troy, Ohio 45373

Present Use:

Bridge is open to restricted traffic.

Significance:

This bridge has been determined eligible for listing in the National Register of Historic Places because it is a good representative example of the Pennsylvania through truss design. It was constructed by the Central States Bridge Company, a company regarded significant for its regional bridge construction activities.

Project Information:

This documentation was undertaken in May, 1993 in accordance with the Memorandum of Agreement by the Federal Highway Administration, Ohio Historic Preservation Officer and the Advisory Council on Historic Preservation as a mitigation measure prior to the removal of the bridge.

Fred Mitchell
Historic Preservation Associates
1026 Lenox Place
Cincinnati, Ohio 45229

The location of the Tipp-Elizabeth Road Bridge has historically been used as a river crossing over the Great Miami River at Tipp City, formerly known as Tippecanoe City. This crossing served as a link for the agricultural landscape immediately to the northeast of the city. County route 166, which uses the bridge, is a major local road connecting a farming area to Tipp City. Since the founding of the city in 1840, this river crossing has facilitated the movement of agricultural products to market. This was especially true when the Miami and Erie Canal and railroad passed through the city and served distant markets.

Initial settlement of the area was taking place as early as the 1790's with pioneering farming taking hold by the 1820's and an active agricultural landscape developing by the 1830's. As the agricultural economy developed, Tipp City evolved as a local small market center. The Miami and Erie Canal, which linked the Ohio River to Lake Erie, was completed in this area by 1829 and undoubtedly influenced the subsequent location of Tipp City. Farmers needed a crossing to move their products into the city and onto the canal. The location of this bridge was one such crossing. The railroad connected the city with other cities, and more importantly, with other markets by the late 1850's. Tipp City with its canal and railroad connections was a major transport center serving the surrounding agricultural landscape. By the early 1870's the city was not only a local market, but a shipping point for wheat, sheep, and cattle to distant markets that included Dayton and Cincinnati. The bridge location was a vital link for access to the two important modes of transport.

Little has been documented with respect to the types of river crossings that may have used this location. Historically, early river crossing was accomplished either on foot or with the use of animal and wagon. This was probably the situation here since it was an expensive undertaking to build a bridge. The first documented bridge was constructed in 1848 at a cost of \$1,500. It was made of wood and built by Peter Stonebarger, a prolific contractor who gained a local reputation for the many bridges he built in the area. This earliest bridge lasted until 1871 when it was replaced with a two span wooden covered bridge. This bridge was constructed by Robert W. Smith and had an overall length of 280 feet. It cost \$4,480 to build. The stone pier and abutments were built by James and William Hamilton, local contractors who were also in the bridge building business.

The rural landscape was well established by 1871 with very prosperous farms and a variety of public and more dependable toll roads. Tipp City was a small urban place meeting the needs of its citizens and the surrounding farmsteads. The Miami and Erie Canal and Dayton and Michigan Railroad still ran in a north-south

direction through the city.

This river crossing was one of several in the immediate area that could be utilized. Directly east of Tipp City was found a bridge that functioned as part of the Tippecanoe and Carlisle Toll Pike. This private road served to link Tipp City with the smaller community of Carlisle and provided access to the rural landscape for a fee. A second bridge, located approximately one mile to the north, was located at the small community of Cowlesville. Located on the same side of the river as Tipp City, this location also helped to provide rural access to the canal and to the railroad. This location does not now function as a bridge crossing. These three bridges were of extreme importance to the economic vitality of both the rural area and Tipp City.

By the 1890's, the overall pattern of Tipp City being the market center surrounded by the fertile agricultural landscape continued to serve the local needs of both urban and rural residents. One important event, however, had reduced the importance of the Tipp-Elizabeth Road Bridge. During the 1880's, a railroad was constructed approximately one half mile east of the bridge along with a small railroad station known as Grayson Station. This line was a part of the Peoria and Eastern Railroad that was very beneficial to the farmers to the east of the river since they now had access to markets without having to cross this bridge and come into Tipp City. Additionally, the canal system was in decline. A casualty of strong competition from the railroads, the canal proved not to be a major factor in local transportation.

The covered bridge continued to function within a local context. It survived the 1913 flood, a major disaster that destroyed numerous bridges over the Great Miami River and its tributaries in western Ohio. Consequently, Miami County and other counties undertook massive bridge replacement and repair programs. After fifty four years of use, the covered bridge was declared structurally unsafe for heavy traffic in 1925.

The Miami County Commissioners directed their engineer to prepare plans for a new bridge. On June 24, 1925, the County Engineer, also known as the County Surveyor, presented plans for a new steel bridge incorporating the Pennsylvania thru truss design with an estimate of new construction costs. The center pier and end abutments, from the former covered bridge, would be utilized within the new construction. The estimated costs were:

Superstructure	\$26,420
Substructure Repair	300
700' Guardrail	280

Total Estimate -----
\$27,000

The Commissioners accepted the design and authorized the letting of bids on July 3, 1925 that sought proposals from contractors to construct the new bridge. Based on the estimate of construction costs, the Commissioners issued bonds to cover the anticipated cost of construction.

On September 11, 1925 the bids were received and opened by the county. The bids were:

Central States Bridge Co., Indianapolis, Ind.	\$26,490
Champion Bridge Co., Wilmington, Ohio	\$26,900
Oregonia Bridge Co., Lebanon, Ohio	\$26,850
Standard Engineering & Const. Co., Toledo, Ohio	\$26,800

Based on the estimated expenses and the bids received, a tentative award was made to the Central States Bridge Company. Following a review of the proposed plans and bid by the Ohio State Highway Commission, a firm contract was awarded to this firm on September 30, 1925. The contract, signed by the Commissioners on October 2, 1925 read as follows:

THIS AGREEMENT made and entered into this 2nd. day of October, 1925, by and between the Central States Bridge Company of Indianapolis, Ind, party of the first part and the Commissioners of Miami County, Ohio, parties of the second part.

WITNESSETH THAT said party of the first part, for the consideration mentioned, hereby agrees to furnish all tools, labor and materials necessary to construct a two span bridge according to plan with masonry alterations and guard rail, and said work to be commenced by November 15th, 1925 and to be entirely completed by February 1, 1926.

IN CONSIDERATION of the foregoing materials to be furnished, and work to be executed by said party of the first part, said parties of the second part hereby agree to pay to said party of the first part the sum of

ITEMS	PRICES IN WORDS	PRICES IN FIGURE
Two span bridge, masonry changes and guard rail.	Twenty Six Thousand Four Hundred Ninety Dollars.	\$26,490.00

It is further agreed by the parties hereto, that on or about the first day of each month, during the progress of this

work, an estimate shall be made of the relative value of the completed work done during the previous month, and upon the estimate of the Engineer, the said party of the second part shall, about the late part of the month, make payment of said estimate, deducting fifteen (15%) percent from the same as an agreed compensation to be forever retained by the county of Miami, and forfeited by said contractor as agreed and liquidated damages in case the whole amount of work herein named shall not be done in accordance with this agreement and plans, profiles and specifications thereof; and whenever the work under this contract shall have been completed by said contractor to the entire satisfaction of the Board of County Commissioners and Engineer, the said party of the second part within thirty (30) days thereafter shall pay to said contractor a sum amounting to one hundred (100) per cent of the contract price, according to the showing of final estimate less any amount already paid on monthly estimates.

And for the performance of all and every article and agreement above mentioned, the parties hereunto bind themselves, each to the other firmly by these presents; provided however that this contract shall be of no force and effect until a bond in the sum of

Thirteen Thousand Two Hundred Forty Five Dollars (13,245)

approved by the County Auditor of Miami County, Ohio shall be entered into by said party of the first part.

IN WITNESS WHEREOF, The parties hereto have hereunto set their hands in duplicate the day and year first above written.

Signed: Central States Bridge Company
G. K. Cetone, G. A.
Party of the first part.
J. F. Luckey
Ben Herr
Joe Barnett
Commissioners of Miami County, Ohio
Parties of the second part.

(Source: Miami County Commissioners Minutes, Book 19, page 264, October 7, 1925)

The construction of the new bridge was late in getting started. Central States was also given the contract for the demolition of the older covered bridge in March, 1926. The new construction was completed and opened in August, 1926.

The Central States Bridge Company was a firm that was located in Indiana. Starting business as the New Castle Steel Sewer Pipe Company in 1895, the company soon expanded into the construction of small metal truss bridges. Achieving some success, the name was changed to the New Castle Bridge Company in 1897. Starting out on a small scale, this company grew and developed to meet the obligations required of numerous contracts extending beyond its home state into Virginia, Iowa and Michigan. The company moved from New Castle, Indiana into new facilities in nearby Indianapolis in 1902. As business continued to increase and the firm prospered, the name was changed to the Central States Bridge Company in 1905. By then the company specialized in the fabrication of riveted steel beam bridges selling them throughout the central part of Indiana and to other builders and contractors. The company's out of state contracts were a substantial part of its overall business during the period before World War One. Its out of state contracts extended into ten states reaching as far west as Oklahoma, the upper midwest, and into various midwestern states. Bridge construction was either of their own design, or as in the case of the Tipp-Elizabeth Road Bridge, to already drafted engineering drawings and specifications. Bridge fabrication declined in the 1920's and the company went into receivership. It was reorganized as the Central States Bridge and Structural Steel Company in 1925. It continued operation with bridge and structural steel contracts until ceasing operation in the early 1950's.

This bridge consists of two spans incorporating the Pennsylvania through truss design and steel riveted construction. It was designed by the Miami County Surveyor's Office, now known as the Engineer's Office. The overall length is 288' and the width, out to out of trusses is 20'-7". Its roadbed clearance width is 17'-5" between the guardrails. Overall height, from bottom chord to top chord is 27' with a maximum center clearance from roadbed to bottom of center sway brace is 16'-3".

The east span is 143' in total length with each of its 8 panels measuring 18'-1 1/2" in length. The west span is 145' in length with each of its 8 panels measuring 17'-10 1/2". Each span exhibits 2 incline end and 6 interior panels. Inclined end posts and top chords are composed of two 10" high channel beams capped with a 16" by 3/8" riveted cover plate. The bottom chord is made up of two 10" by 2 3/4" channel beams that are separated by a 4" space. The details of the web are composed of vertical I beams measuring 9 3/4" by 8" and diagonals made up of paired angle iron 5" by 3 3/4". The verticals and diagonals are riveted to the top and bottom chords and further strengthened with the use of 3/8" gussets where all members meet. The four interior panels, of each span, are connected by the use of an 8"

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I beam tie bar that is riveted with gussets at the interior verticals and passes through the open diagonals. Sway braces have top struts and lower sway struts composed of 8" I beams. Simple 3" by 2 1/2" angle iron make up the two part interior sway bracing. Top chords are further connected with small angle iron top lateral bracing. Height of the overall sway brace varies with location. The end portal bracing is divided into four parts with small angle iron sway bracing. Simple spandrels accentuate the end portal brace. An 18" lattice guard rail extends across both sides of each span.

The deck is composed of seven steel stringers extending the length of each span and are supported with large floor I beams riveted at their connection with the bottom chords. The superstructure rests atop two end abutments and a central pier by means of bearing plates with a pin extending through each incline end post. Each abutment is composed of rectangular ashlar limestone with companion wing walls extending off at a 45 degree angle for 15 feet from the abutment face. The wing walls are capped with concrete. The center pier is rectangular with a pointed end on the upstream side. It is also composed of rectangular ashlar limestone, but has been stuccoed over with concrete. The original roadbed was removed at an unknown date and replaced with a concrete bed.

Over the years, the bridge has experienced various levels of maintenance and rehabilitation. Maintenance has been limited to removal of old paint and repainting in 1969. Minor steel repair was undertaken in 1985 in response to structural decay.

The original design of the bridge does not now comply with modern safety standards. The roadbed width is narrower than the recommended 22' width for minimum safety of a two lane bridge. Legal load limits have been reduced several times over the years for safety reasons. Water and salt have accentuated the deterioration of various metal members, especially below the deck. Corrosion to bottom chord and floor beam connections, floor beam and stringer connections, and vertical and diagonal connections are examples of serious structural decay.

This is an important river crossing within the county. The average daily traffic across the bridge in 1987 was 1,660 cars and trucks. By 1990 it had increased to 1,990 vehicles per day. Projected estimates for 2010 show a count of 2,654 vehicles.

The Miami County Commissioners and the County Engineer are very concerned that this bridge does not comply with modern safety standards and with continued decay to structural steel members. Rehabilitation is not an alternative due to the extent of

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decay, substandard width, and rehabilitation costs. In order to once again facilitate safe travel across this location, it is necessary to demolish this steel bridge and construct one that is designed for future anticipated needs and safety. The new bridge shall provide continued access between Tipp City and the eastern agricultural area, much in the same manner as the current bridge and its wooden predecessor.

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Page 264, October 7.

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Ohio Department of Transportation, The Ohio Historic Bridge Inventory, Evaluation, and Preservation Plan, Columbus, Ohio, 1983.

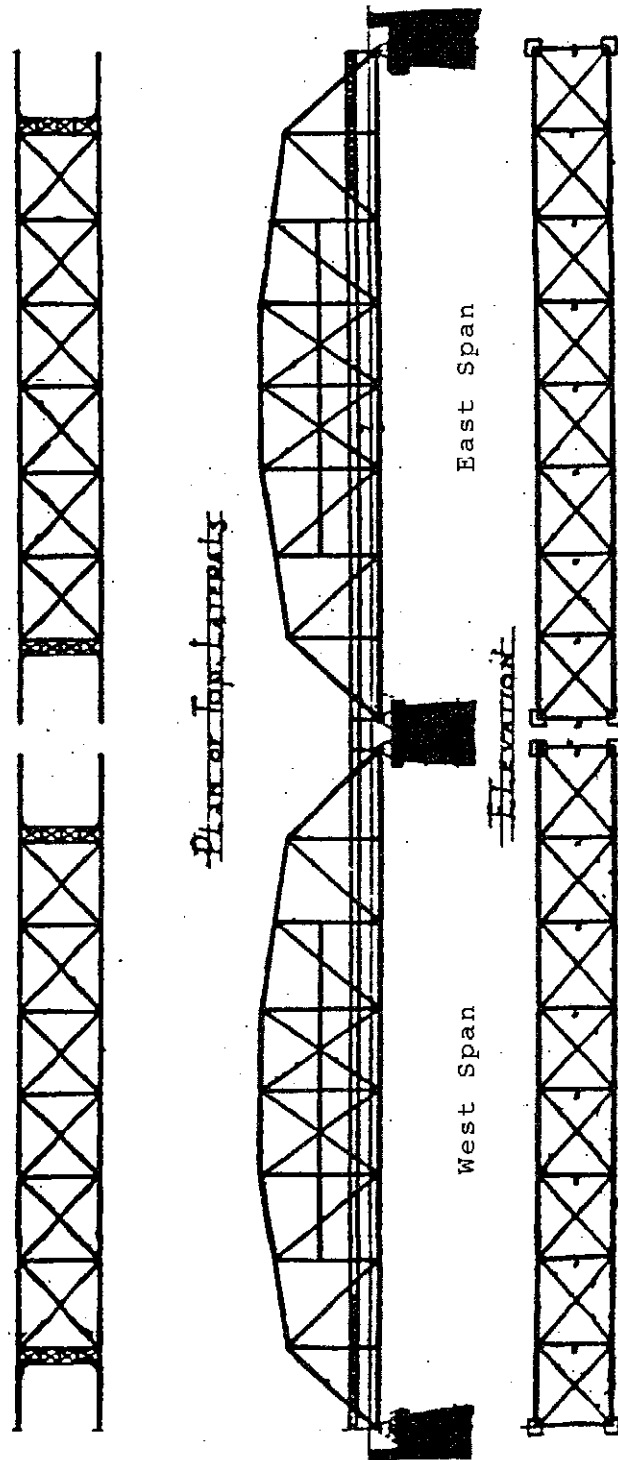
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Note:

Original drawings of the Tipp-Elizabeth Road Bridge are on file with the Miami County Engineer's Office, 2100 North County Road 25-A, Troy, Ohio 45373.



Plan or Top View

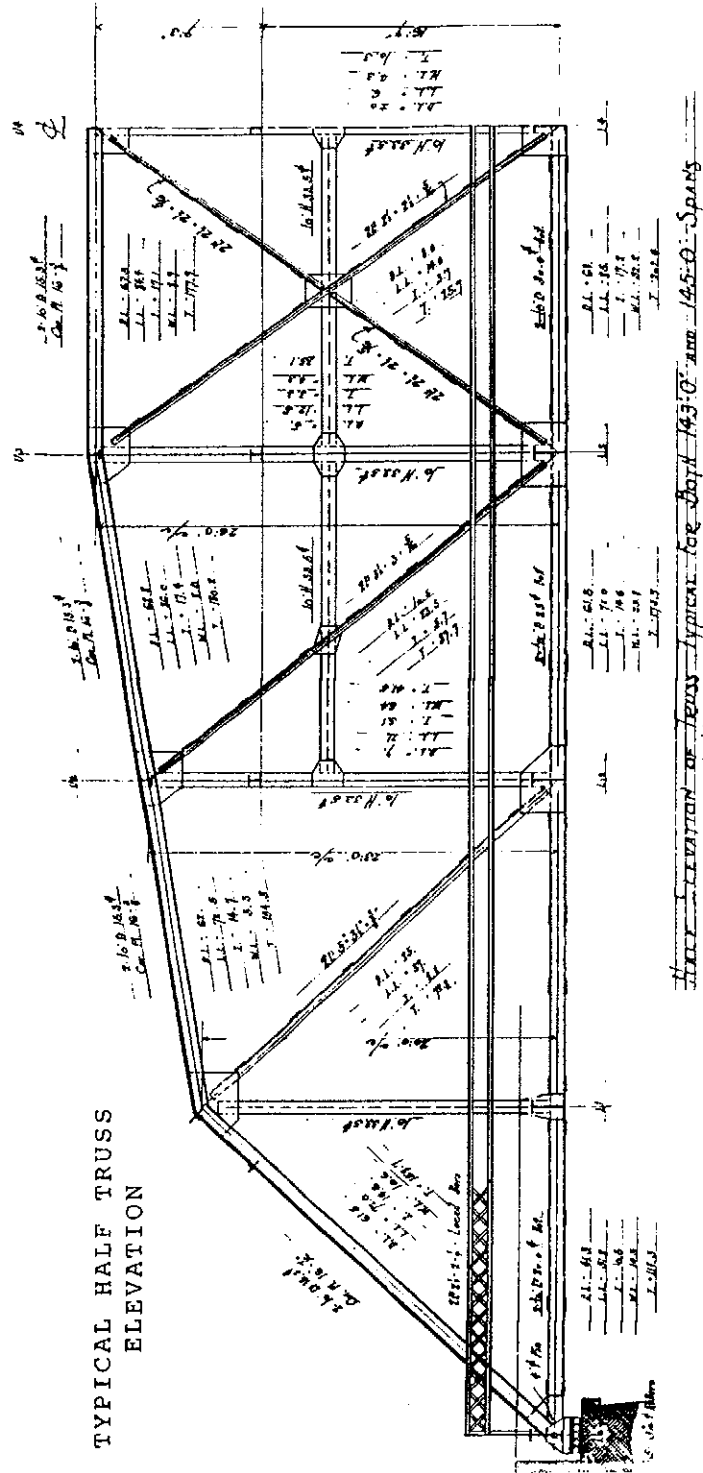
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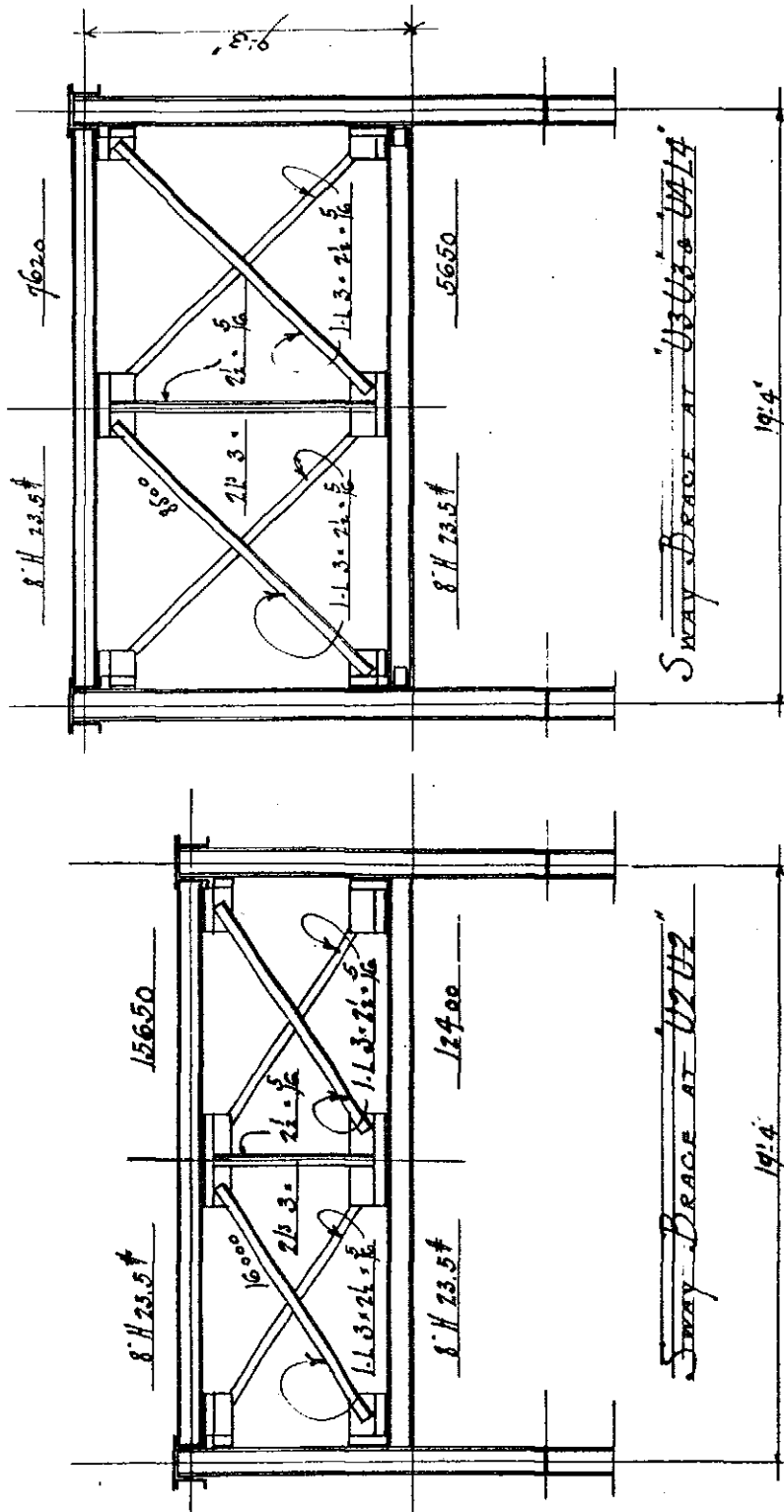
West Span

Elevation

Plan or Bottom View

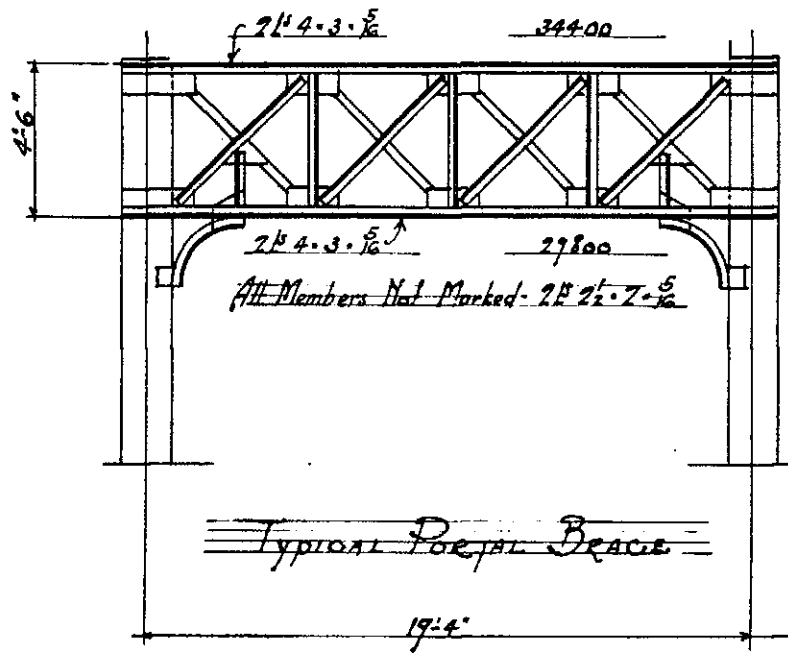
OVERALL VIEW OF
SUPERSTRUCTURE AND SUBSTRUCTURE



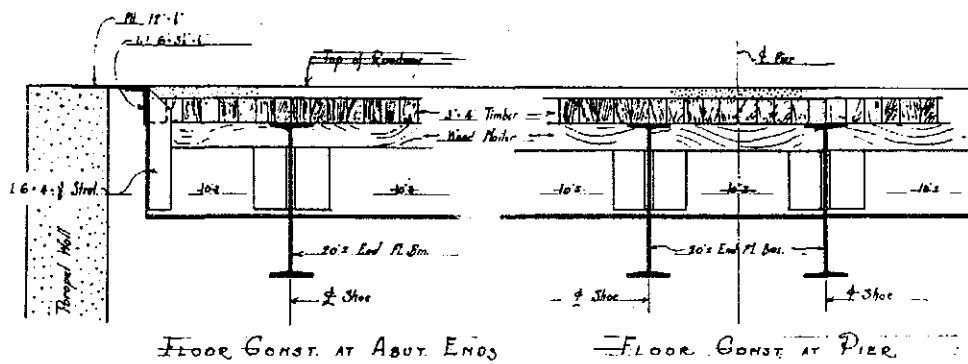


SWAY BRACE DETAILS

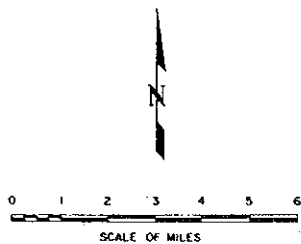
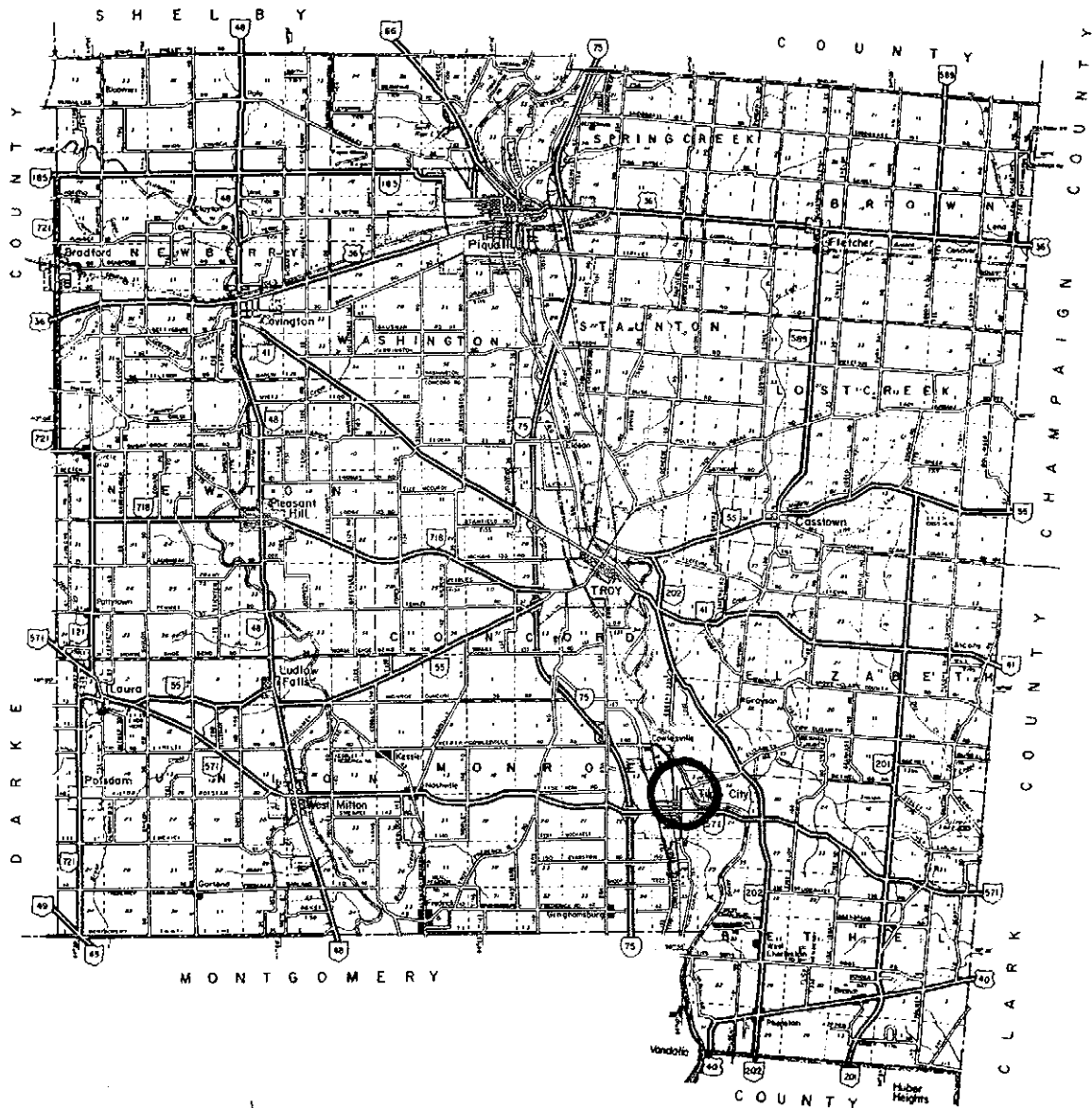
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VARIOUS DETAILS



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LOCATION MAP

Site of Bridge Within
Miami County, Ohio

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